

CLAIMS

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B2)

1. A bacterium attenuated by a non-reverting mutation in each of the *aroC* gene, the *ompF* gene and the *ompC* gene.

2. A bacterium according to claim 1 which infects by the oral route

10 3. A bacterium according to claim 1 which is from the genera *Escherichia*, *Salmonella*, *Vibrio*, *Haemophilus*, *Neisseria*, *Yersinia*, *Bordetella* or *Brucella*.

15 4. A bacterium according to claim 3 which is a strain of *Escherichia coli*, *Salmonella typhimurium*, *Salmonella typhi*, *Salmonella enteritidis*, *Salmonella choleraesuis*, *Salmonella dublin*, *Haemophilus influenzae*, *Neisseria gonorrhoeae*,
20 *Yersinia enterocolitica*, *Bordetella pertussis* or *Brucella abortus*.

25 5. A bacterium according to claim 4 which is a strain of enterotoxigenic *E.coli* (ETEC).

6. A bacterium according to ~~any one of the preceding claims~~ which is further attenuated by a mutation in a fourth gene.

claim 1

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7. A bacterium according to claim 6 wherein the fourth gene is *aroA*, *aroD*, *aroE*, *pur*, *htrA*, *gatE*, *cya*, *crp*, *phoP* or *surA*.

claim 1

5 8. A bacterium according to any one of the preceding claims, wherein the mutation in each gene is a defined mutation.

claim 1

9. A bacterium according to any one of the preceding claims, wherein the mutation in each gene is deletion of the entire coding sequence.

claim 1

10. A bacterium according to any one of the preceding claims which has been genetically engineered to express a heterologous antigen.

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11. A bacterium according to claim 10, wherein expression of the antigen is driven by the *nirB* promoter or the *htrA* promoter.

claim 1

12. A vaccine comprising a bacterium as defined in any one of the preceding claims and a pharmaceutically acceptable carrier or diluent.

claim 1

25 13. A bacterium as defined in any one of claims 1 to 11 for use in a method of vaccinating a human or animal.

30 14. An enterotoxigenic *E.coli* cell attenuated by a non-reverting mutation in each of the *aroC* gene, the

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~~ompF~~ gene and the *ompC* gene, for use in a method of vaccinating a human or animal against diarrhoea.

claim 1

15. Use of a bacterium as defined in any one of claims
5 ~~1 to 11~~ for the manufacture of a medicament for
vaccinating a human or animal.

10 16. A method of raising an immune response in a
mammalian host, which comprises administering to
the host a bacterium attenuated by a non-reverting
mutation in each of the *aroC* gene, the *ompF* gene
and the *ompC* gene.

-*A2S*
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